

Washington County, Utah Construction Design Standards



Special Thanks To:

*Santa Clara City
Washington City
St. George City*

Ordinance No.
Adopted: Month 00, 2009



TABLE OF CONTENTS

SECTION 1 INTRODUCTION

1.1 Introduction.	1-1
1.2 Definitions.....	1-1
1.3 Bonds and Insurance.....	1-6
1.4 Starting and Completing the Work.....	1-6
1.5 Before Construction Begins.....	1-7
1.6 Preconstruction Conference.....	1-7
1.7 Approved Documents Intent.....	1-7
1.8 Amending and Supplementing the Approved Drawings	1-8
1.9 Underground Facilities Shown or Indicated	1-8
1.10 Underground Facilities Not Shown or Indicated.....	1-8
1.11 Reference Points and Monuments	1-9
1.12 Contractor's Responsibilities -Supervision and Superintendents.....	1-9
1.13 Safety and Protection	1-9
1.14 Site Emergencies	1-10
1.15 Authorized Variations in Work	1-11
1.16 Rejecting Defective Work	1-11
1.17 Warranty and Guarantee	1-11
1.18 Inspections and Observations	1-11
1.19 Contractor Employees	1-12
1.20 Historic, Archaeological or Paleontological Discoveries	1-12
1.21 Working Hours.....	1-12
1.22 Uncovering Work	1-12
1.23 City's Representative May Stop the Work	1-12
1.24 Correction or Removal of Defective Work by Contractor	1-13
1.25 One Year Correction Period	1-13
1.26 Acceptance of Defective Work.....	1-13
1.27 Correction or Removal of Defective Work by Owner	1-13
1.28 Work Fully Completed	1-13
1.29 Final Inspection	1-14
1.30 Final Walkthrough.....	1-14
1.31 Final Acceptance	1-14
1.32 Suspension of Work	1-14

SECTION 2 GENERAL REQUIREMENTS

2.1	Introduction.....	2-1
2.2	Construction Drawings	2-1
2.2.1	General.....	2-1
2.2.2	Curb and Gutter, Drainage, Sidewalks and Streets	2-2
2.2.3	Sewer/Storm Sewer.....	2-3
2.2.4	Culinary Water.....	2-4
2.2.5	Secondary Water.....	2-4
2.2.6	Power	2-5
2.2.7	Detail Sheets	2-5
2.2.8	Grading/Erosion Control Plan	2-5
2.2.9	General Utility Location Information	2-6
2.2.10	Drawing Submittals.....	2-7
2.3	Inspection, Testing and Quality Control.	2-7
2.3.1	Requests for Inspection.	2-7
2.3.2	Construction Completion Inspection (Final Inspection).....	2-7
2.3.3	Guarantee of Work	2-8
2.3.4	Quality Control Testing	2-8
2.3.5	Test Reports	2-9
2.4	Drawings of Record	2-9
2.5	Barricades and Warning Signs - Work Area Protection.	2-9
2.5.1	General Traffic Control Requirements	2-10
2.6	Cooperation with Utilities	2-11
2.7	Cooperation Between Contractors.....	2-12
2.8	Construction Stakes, Lines and Grades	2-12
2.9	Use of Explosives	2-13
2.9.1	General Blasting Criteria.....	2-13
2.10	Protection and Restoration of Property and Landscape	2-13
2.11	Survey Monuments.	2-14
2.12	Hazardous Materials Discoveries	2-14
2.13	Improvement Sequence.....	2-15

SECTION 3 DESIGN STANDARDS

3.1	Introduction.....	3-1
3.2	Street Design.....	3-1
3.2.1	Street Cross-section Standards.....	3-1
3.2.2	Roadway Network Design	3-1
3.2.3	Improvement Requirements	3-3
3.2.3.1	Curb, Gutter and Sidewalk	3-3
3.2.3.2	Driveway's	3-3
3.2.3.3	Pavement	3-3
3.2.3.4	Street Lighting	3-3
3.2.3.5	Cross Gutters	3-3
3.2.3.6	Handicap Ramps.....	3-3
3.2.3.7	Roadway Medians and Round-Abouts	3-4
3.2.3.8	Minimum Access	3-4
3.2.3.9	Drainage.....	3-4
3.2.3.10	Traffic Control Devices	3-4
3.2.3.11	Pavement Marking	3-4
3.2.3.12	Street Trees & Landscaping	3-4
3.2.3.13	Other Improvements.....	3-4
3.2.4	Technical Design Requirements.....	3-4
3.2.4.1	Street Grades	3-4
3.2.4.2	Intersections	3-5
3.2.4.3	Intersection Spacing.....	3-7
3.2.4.4	Maximum Design Volume.....	3-7
3.2.4.5	Cul-de-sac Streets.....	3-7
3.2.4.6	Sidewalks	3-7
3.2.4.7	Curb and Gutter.....	3-8
3.2.4.8	Planter Strips.....	3-8
3.2.4.9	Design Speed.....	3-8
3.2.4.10	Clear Sight Distance at Intersections	3-8
3.2.4.11	Vertical Alignment	3-9
3.2.4.12	Safe Stopping Sight Distance.....	3-10
3.2.4.13	Horizontal Curves.....	3-10
3.2.4.14	Superelevation	3-10
3.2.4.15	Deceleration Lanes	3-11
3.2.4.16	Driveway Profiles	3-11
3.2.4.17	Alignment and Continuity - Off-site.....	3-12
3.2.5	Pavement Structural Design	3-13
3.2.6	Mail Boxes	3-14
3.2.7	Signs and Pavement Markings	3-15
3.2.8	Underground Water	3-15
3.3	Soil Study Guidelines	3-15
3.3.1	Geotechnical Report.....	3-15
3.4	Drainage and Flood Control Design	3-18
3.4.1	General Requirements	3-18
3.4.2	Design Criteria - Streets	3-19

3.4.3	Design Criteria - Storm Drains	3-20
3.4.4	Design Criteria - Culverts.....	3-21
3.4.5	Design Criteria - Bridges.....	3-21
3.4.6	Design Criteria - Channels.....	3-22
3.4.6.1.	Open Channels	3-22
3.4.6.2.	Man-made Channels	3-22
3.4.6.3	Natural Channel	3-23
3.4.7	Storage Facilities	3-23
3.4.7.1	Design Criteria.....	3-23
3.4.8	Floodplains	3-24
3.4.9	Erosion Control.....	3-24
3.4.10	Irrigation Ditches.....	3-25
3.4.10.1	Use of Ditches	3-25
3.4.10.2	Irrigation Company Approval	3-25
3.4.11	Water Quality Control.....	3-25
3.5	Sanitary Sewer Design	3-26
3.5.1	Design Flows	3-26
3.5.2	Minimum Size and Depth.....	3-27
3.5.3	Alignment.....	3-28
3.5.4	Service Connections.....	3-28
3.5.5	Manholes	3-29
3.5.6	Utility Clearances.....	3-30
3.5.7	Suspended Crossings	3-31
3.5.8	Pressure (Force) Mains	3-31
3.5.9	Connection Into Existing Systems	3-32
3.6	Culinary Water Design.....	3-32
3.6.1	Design Flow Pressure	3-32
3.6.2	Flow Design Criteria	3-33
3.6.3	Minimum Size and Depth.....	3-33
3.6.4	Valves and Hydrants	3-33
3.6.5	Pressure Reducing Valves	3-33
3.6.6	Fire Hydrant Spacing and Location	3-34
3.6.7	Fire Flow Requirements	3-34
3.6.8	Miscellaneous Water System Design Criteria	3-35
3.6.9	Network Hydraulic Analysis	3-37
3.6.9.1	When Required	3-37
3.6.9.2	Design	3-37
3.6.9.3	Submittal for Review and Approval	3-37
3.6.9.4	Miscellaneous.....	3-38
3.7	Secondary Water or Wastewater Reuse Irrigation System.....	3-39
3.8	Other Utilities Systems Design	3-39
3.8.1	Responsibility.....	3-39
3.8.2	Street Lights.....	3-39
3.8.3	Burial of Lines	3-39
3.8.4	Layout.....	3-39
3.8.5	Front Lot Line Systems	3-39

3.8.6	Quality Control	3-39
3.9	Traffic Standards	3-40
3.9.1	Access Control	3-40
3.9.1.1.	General Requirements	3-40
3.9.2	Traffic Impact Studies	3-40
3.10	Survey Monumentation Standards	3-42
3.10.1	General Requirements	3-42
3.10.2	Monuments.....	3-42
3.10.3	Types of Monuments	3-43

SECTION 4 CONSTRUCTION STANDARDS

4.1	Introduction.....	4-1
4.2	Survey Requirements	4-1
4.3	Earthwork	4-1
4.3.1	Materials	4-1
4.3.1.1	Excavation	4-1
4.3.1.2	Subsoil Reinforcement	4-1
4.3.1.3	Backfill	4-2
4.3.2	Construction Methods.....	4-2
4.3.2.1	Construction of Embankments	4-2
4.3.2.2	Compaction of Earth Materials	4-2
4.3.2.3	Subgrade Preparation.	4-3
4.3.2.4	Construction of Nonstructural Fills.	4-4
4.3.3	Quality Control.....	4-4
4.3.3.1	Testing.....	4-4
4.3.3.2	Acceptance.....	4-4
4.3.4	Special Requirements	4-5
4.4	Pipeline Construction.....	4-5
4.4.1	Materials	4-5
4.4.1.1	Sewer Pipe and Fittings.....	4-5
4.4.1.2	Storm Drain Pipe	4-7
4.4.1.3	Sewer Manholes.....	4-8
4.4.1.4	Water Pipe and Fittings	4-11
4.4.2	Construction Methods.....	4-19
4.4.2.1	Control of Ground Water	4-19
4.4.2.2	Excavation for Pipelines	4-19
4.4.2.3	Sheeting, Bracing, and Shoring of Excavations.	4-21
4.4.2.4	Blasting.....	4-21
4.4.2.5	Pipe Laying and Bedding.	4-21
4.4.2.6	Backfilling and Compaction	4-25
4.4.2.7	Trenches on Highways and Streets.....	4-27
4.4.2.8	Cleaning of Sanitary Sewer Lines	4-29
4.4.2.9	Cleaning and Disinfection of Water Systems.....	4-29
4.4.2.10	Special Requirements	4-29
4.4.3	Quality Control.....	4-30
4.4.3.1	Trench Backfill Moisture/density Testing	4-30

4.4.3.2	Sanitary and Storm Sewer Line Testing and Acceptance	4-31
4.4.3.3	Water System Testing and Acceptance.....	4-35
4.5	Roadway Construction.....	4-36
4.5.1	General Requirements	4-36
4.5.2	Construction Staking	4-36
4.5.3	Grade Control Systems	4-37
4.5.4	Geotechnical Investigation.....	4-38
4.5.5	Roadway Subgrade	4-38
4.5.5.1	Preparation.....	4-38
4.5.5.2	Tolerances.....	4-39
4.5.6	Subbase - Class I and Class II.	4-39
4.5.7	Untreated Roadbase - One Inch and Three-quarter Inch	4-40
4.5.8	Prime Coat.....	4-42
4.5.9	Tack or Fog Seal Coat.....	4-43
4.5.10	Dense-graded Asphalt and Reclaimed Asphalt Pavement (RAP)	4-44
4.5.10.1	Asphalt Design	4-44
4.5.10.2	Asphalt Cement.....	4-45
4.5.10.3	Shipment of Asphalt Material	4-46
4.5.11	Hydrated Lime for Asphalt Mixture	4-47
4.5.12	Aggregate	4-48
4.5.13	Storing, Mixing & Shipping of Plant Mix Bituminous Pavements ..	4-49
4.5.14	Asphalt Concrete Surge and Storage Silos	4-49
4.5.15	Shipping Asphalt Mixtures	4-49
4.5.16	Surface Preparation for Asphalt Overlays.....	4-50
4.5.17	Adjustment of Manhole and Utility Covers.....	4-50
4.5.18	Asphalt Paving Equipment.....	4-50
4.5.19	Rollers	4-52
4.5.20	Weather and Date Limitations	4-52
4.5.21	Spreading and Finishing	4-52
4.5.22	Rolling and Compacting	4-54
4.5.23	Open-graded Wearing Course.....	4-56
4.5.23.1	Wearing Course	4-56
4.5.23.2	Suitability of Aggregate	4-57
4.5.23.3	Mix Design	4-58
4.5.23.4	Mixing.....	4-58
4.5.23.5	Surface Placement.....	4-58
4.5.24	Acceptance Testing Requirements and Tolerances	4-59
4.5.24.1	Subbase	4-59
4.5.24.2	Roadbase and Recycled Aggregate Materials (RAM).	4-60
4.5.24.3	Dense-graded Asphalt Pavements.....	4-61
4.5.24.4	Compaction of Dense-graded Asphalt Pavement	4-62
4.5.24.5	Open-graded Asphalt Wearing Course.	4-63
4.5.24.6	Asphalt Pavement Surfaces	4-63
4.6	Bituminous Seal Coat (Chip Seal).	4-64
4.6.1	Material Specifications.....	4-64
4.6.1.1	Bituminous Material.....	4-64

4.6.1.2 Aggregate (Chips)	4-64
4.6.2 Aggregate Quality Control	4-65
4.6.3 Equipment	4-66
4.6.3.1 Asphalt Distributor	4-66
4.6.3.2 Aggregate Spreader	4-67
4.6.3.3 Rollers	4-67
4.6.3.4 Dump Trucks	4-67
4.6.3.5 Loaders	4-67
4.6.3.6 Power Brooms	4-68
4.6.4 Bituminous Chip Seal Construction Methods	4-68
4.6.4.1 Surface Preparation	4-68
4.6.4.2 Asphalt Application	4-68
4.6.4.3 Aggregate Spreading	4-69
4.6.4.4 Aggregate Compaction	4-69
4.6.4.5 Loose Aggregate Removal	4-70
4.6.4.6 Sanding	4-70
4.6.4.7 Appearance	4-70
4.6.4.8 Weather Limitations	4-71
4.7 Asphalt Emulsion Seal Coat (Slurry Seal)	4-71
4.7.1 Material Specifications	4-71
4.7.1.1. Asphalt Emulsion	4-71
4.7.1.2. Aggregate	4-71
4.7.1.3. Filler	4-71
4.7.1.4. Set Control Additive	4-71
4.7.1.5. Water	4-75
4.7.2 Material Quality Control	4-75
4.7.2.1. Sampling and Testing	4-75
4.7.2.2. Job Mix Design	4-75
4.7.3 Equipment	4-76
4.7.3.1. Slurry Mixing Machine	4-76
4.7.3.2. Slurry Spreader	4-76
4.7.3.3. Surface Cleaning Equipment	4-77
4.7.3.4. Auxiliary Equipment	4-77
4.7.4 Asphalt Emulsion Slurry Construction Methods	4-77
4.7.4.1. Resident Notification	4-77
4.7.4.2. Vehicle Removal	4-77
4.7.4.3. Preparation of Surface	4-77
4.7.4.4. Cleaning Streets	4-77
4.7.4.5. Sewer Manhole Lids and Water Valve Covers	4-78
4.7.4.6. Test Section	4-78
4.7.4.7. Water Fog	4-78
4.7.4.8. Preparation of Slurry	4-78
4.7.4.9. Application of Slurry	4-79
4.7.4.10. Handwork	4-79
4.7.4.11. Joints	4-79
4.7.4.12. Curing	4-79

4.7.4.13. Weather Limitations.....	4-79
4.7.5 Fog Coat.....	4-80
4.7.5.1. Equipment.....	4-80
4.7.5.2. Material	4-80
4.7.5.3. Application.....	4-80
4.7.5.4. Weather Limitations.....	4-80
4.7.5.5. Cure Time	4-81
4.7.5.6. Preparation of Pavement Surfaces.....	4-81
4.7.5.7. Sanding.....	4-81
4.8 Concrete Work.....	4-81
4.8.1. Materials.....	4-81
4.8.1.1 Portland Cement Concrete Material	4-81
4.8.1.2 Concrete Reinforcing Materials.	4-88
4.8.1.3 Curb, Gutter, Sidewalk and Base Materials.....	4-89
4.8.2. Construction Methods and Equipment.....	4-89
4.8.2.1 General Concrete Placement.....	4-90
4.8.2.2 Concrete Reinforcement Installation	4-92
4.8.2.3 Curb, Gutter and Sidewalk Concrete Placement.	4-93
4.8.2.4 Concrete Base Materials Placement.	4-97
4.8.3. Quality Control.....	4-97
4.8.3.1 Concrete Testing	4-97
4.8.3.2 Concrete Base Material Testing	4-98
4.8.3.3 Acceptance.....	4-98
4.9 Restoration of Existing Surface Improvements.	4-99
4.9.1 Introduction.....	4-99
4.9.2 Gravel Surfaces.....	4-99
4.9.3 Bituminous Surfaces.....	4-100
4.9.4 Concrete Surfaces.....	4-100

SECTION 5 SIGNING AND PAVEMENT MARKINGS

5.1 Introduction.....	5-1
5.2 Signing Materials, Fabrication and Placement.....	5-1
5.2.1 Street Name Signs	5-1
5.2.2. Traffic Signs.....	5-1
5.2.3 Visibility.....	5-1
5.3 Pavement Markings.....	5-1
5.3.1 Line Types.....	5-2
5.3.2 Pavement Word and Symbol Markings	5-2
5.3.3 Traffic Paint	5-2
5.3.4 Temporary Markings.....	5-3
5.3.5 Raised Pavement Markers	5-3

LIST OF TABLES

Table 3.1	Street Cross-section Configurations	3-3
Table 3.2	Facility Type- Access Distance From Corner	3-6
Table 3.3	Design Speed	3-8
Table 3.4	Sight Distance at Intersections	3-9
Table 3.5	Safe Stopping Sight Distance	3-10
Table 3.6	Horizontal Curves	3-10
Table 3.7	Driveway Type and Adjacent Street Classification	3-12
Table 3.8	Street and Gutter Capacity for the 10-year Storm	3-20
Table 3.9	Sanitary Sewer Design Flows	3-26
Table 3.10	Sanitary Sewer Minimum Slopes	3-27
Table 3.11	Sanitary Sewer Laterals	3-29
Table 4.1	Sewer Pipe Dimensions	4-6
Table 4.2	General Pipe Requirements	4-11
Table 4.3	Corporation Stops	4-15
Table 4.5	Backfill Material	4-21
Table 4.6	Air Testing	4-32
Table 4.7	Exfiltration Test	4-33
Table 4.8	Minimum Roadway Structural Requirements	4-39
Table 4.9	Subbase Aggregate Gradation	4-40
Table 4.10	Roadbase Aggregate Gradation	4-42
Table 4.11	Marshall Design Requirements	4-45
Table 4.12	Paving Grade Liquid Asphalt Requirements	4-46
Table 4.13	Dense-graded Asphalt Aggregate Gradation	4-49
Table 4.14	Climate Limitations	4-52
Table 4.15	Open-graded Asphalt Aggregate Gradation	4-56
Table 4.16	Rubberized Liquid Asphalt Requirements	4-57
Table 4.17	Subbase Sieve Size and Deviation	4-60
Table 4.18	Roadbase and (RAM) Sieve Size and Deviation	4-61
Table 4.19	Bituminous Material	4-64
Table 4.20	Gradation of Aggregate for Chip Seal Coats	4-65
Table 4.21	Slurry Seal Test Specifications - Tests of Emulsions	4-72
Table 4.22	Slurry Seal Test Specifications - Tests of Residue	4-73
Table 4.23	Slurry Seal Test Specifications - Tests on Slurry Seal Job Mixture	4-74
Table 4.24	Slurry Mixture Gradation	4-75
Table 4.25	Fine Aggregate	4-82
Table 4.26	Fine Aggregate Gradation Requirements	4-82
Table 4.27	Course Aggregate	4-83
Table 4.28	Course Aggregate Gradation Requirements	4-84
Table 4.29	Concrete Mix Specifications	4-87
Table 4.30	Synthetic Reinforcing Fibers	4-88
Table 4.31	Reinforcing Bar Clearance	4-93

SECTION 1

INTRODUCTION

1.1 INTRODUCTION. This section contains the general conditions and instructions for development and other related construction of infrastructure improvements within Washington County. It sets forth the conditions by which this work will take place. It also sets forth the duties, responsibilities and obligations for the construction of improvements. These conditions apply to all development related work.

1.2 DEFINITIONS. Wherever used in these specifications the following terms have the meanings indicated, which are applicable to both the singular and plural thereof.

1. **AASHTO:** The American Association of State Highway and Transportation Officials.
2. **ACCESS:** An intersection or driveway that connects with a public roadway to provide ingress and egress to a property or parcel of ground, whether public or private.
3. **ANSI:** The American National Standard Institute.
4. **APPROVED DOCUMENTS:** The approved drawings, standard specifications, standard drawings, and any other approved supplemental specifications and conditions.
5. **APPROVED DRAWINGS:** The graphic and pictorial portions of the approved documents approved by the County's Representative showing the design, location and dimensions of the work, and generally include: the plan, profiles, elevations, cross sections, details, schedules and diagrams, etc.
6. **ASTM:** The American Society for Testing Materials.
7. **AWWA:** The American Water Works Association.
8. **APWA:** The American Public Works Association
9. **BACKFILL:** Any earth that has been excavated from a trench or other excavation and then replaced and compacted with existing or imported material.
10. **BENCH MARK:** A surveyor's mark made on a stationary object of previously determined position and elevation and used as a reference point for surveys or other applicable points.
11. **BONDS:** An instrument of security submitted by the owner and approved by the County to guarantee and/or warranty the required improvements.

12. **COUNTY:** Washington County, Utah, a governmental entity having authority to adopt and enforce ordinances.
13. **COUNTY ENGINEER:** The officially appointed Professional Engineer designated as the "County Engineer" to act in behalf of and for Washington County. May also refer to the County Engineer's designated representative.
14. **COUNTY'S REPRESENTATIVE (PUBLIC WORKS DIRECTOR):** The person designated to act for and in behalf of Washington County, or their designee.
15. **COUNTY SURVEYOR:** The officially designated Professional Surveyor who acts in the capacity as the County Surveyor, or their designee.
16. **CONTRACTOR:** The person, firm, or corporation with whom the owner has entered into an agreement to construct the necessary work.
17. **CUSTOMER:** One for whom County related services are rendered.
18. **DECELERATION LANE:** An auxiliary lane, independent from through traffic lanes, which is developed to allow turning vehicles to reduce their speed when approaching a driveway or intersection.
19. **DEFECTIVE WORK:** The work that is unsatisfactory, faulty or deficient, does not conform to the approved documents, does not meet the requirements of any inspection, reference standard, test or approval referred to in the approved documents, or has been damaged prior to the County Representative's final inspection.
20. **DEVELOPER:** The authority, corporation, association or firm which undertakes the development or subdivision of land or properties and with whom the Contractor has entered into an agreement and for whom the work is to be provided.
21. **DEVELOPMENT:** The process of constructing a building or group of buildings for residential, commercial, industrial or other uses or the general changing of land or property into something other than its current or natural state or condition.
22. **DRAWING OF RECORD:** The drawing(s) or plan(s) which show the locations and dimensions of constructed facilities, based on actual measurements taken in the field, as governed by County policy and ordinances.

23. **EMBANKMENT:** Any raised area of compacted earth used to support a roadway, curb and gutter, sidewalk, trail, structure, parking lot, etc. Material used for an embankment will be specified and tests will be performed to determine the material's adequacy for the specific project.
24. **ENGINEER:** A Civil Engineer registered with the Utah State Department of Business Regulation and licensed to practice as a Professional Engineer in the State of Utah.
25. **FILL:** Any material used to fill a depression, hole, or any other anomaly in the ground. Material used for the fill will be specified and tests will be performed to determine the material's adequacy for the specific project. An embankment is a type of fill.
26. **FINAL ACCEPTANCE:** Satisfaction on the part of the County's Representative that all work is fully complete and there are no other obligations to be fulfilled by the Contractor or the Developer.
27. **FINAL INSPECTION:** An inspection of the work which is conducted by the County's Representative(s) and other necessary parties, after having said the work is fully completed.
28. **FIRE CHIEF:** The officially appointed person designated as the County Fire Chief for Washington County or their designated representative.
29. **FLOOD PLAIN:** That area of a channel, river or other water course and the adjacent land areas which are inundated during abnormally high water (flooding) generally associated with a 100-year or 500-year flood event.
30. **FLOOD WAY:** The area of the flood plain that is or must be reserved in order to pass the 100-year flood event in accordance with applicable regulations and which will not be encroached upon by construction, fill or other development.
31. **GEOTECHNICAL ENGINEER:** That Professional Engineer registered with the Utah State Department of Business Regulation and licensed to practice as a Professional Engineer in the State of Utah specializing in Geotechnical investigations which has been retained to investigate soil and other similar conditions and submit recommendations and/or reports concerning said conditions.
32. **HILLSIDE DEVELOPMENT STANDARDS:** Any standards that may be noted in the Washington County Hillside Ordinance.
33. **INSPECTION PUNCH LIST:** A written list of work discrepancies and deficiencies compiled by the County's Representatives and others during a final or other inspection.

34. **I.T.E.:** The Institute of Transportation Engineers.
35. **WASHINGTON COUNTY STAFF MEETING:** A group of representatives from utility companies and Washington County Staff in the Washington County area that meet as needed to review utility and development plans as required.
36. **LAWS AND /OR REGULATIONS:** Any federal, state, county, city, or local jurisdiction's laws, rules, regulations, ordinances, codes, and orders.
37. **MAXIMUM DRY DENSITY:** The Maximum Dry Density as determined by ASTM Standard D-1557.
38. **MUTCD:** "The Manual of Uniform Traffic Control Devices", latest edition and revisions as published by the U.S. Department of Transportation, Federal Highway Administration.
39. **OWNER:** The authority, corporation, association or firm with whom the Contractor has entered into an agreement and for whom the work is to be provided. This can refer to the Developer or the Owner of the property being developed.
40. **OWNER'S ENGINEER (OR THE ENGINEER):** The professional engineer or engineering firm (registered with the Utah State Department of Business Regulation) which has been retained by the Owner to produce plans, specifications, oversee work, etc. required by the Owner in the prosecution of the development of said Owner's properties. (See Engineer).
41. **OWNER'S REPRESENTATIVE:** The person, firm, or corporation designated to act for and in behalf of the owner.
42. **PLANS (DRAWINGS):** The graphic and pictorial portions of the documents approved by the County's Representative showing the design, location and dimensions of the work, which generally include all details, schedules and diagrams required for construction of the project.
43. **POWER DEPARTMENT:** Refers to any of the Power Departments that provides service to residents of Washington County.
44. **PRIVATE IMPROVEMENTS:** The work or improvements which are undertaken by the Owner or Developer for the benefit of a select group of private individuals, which are not maintained or repaired by the County, and are not dedicated to the County for public use.
45. **PROJECT:** The total work to be provided under the approved documents.

46. **PUBLIC IMPROVEMENTS:** The work or improvements which are dedicated to and maintained by the County for the benefit of the public-at-large
47. **SHOP DRAWINGS:** All drawings, diagrams, illustrations, schedules, and other data prepared by or for the Contractor to illustrate some portion of the work as well as all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by suppliers and submitted by the Contractor to illustrate material or equipment required for some portion of the work.
46. **SOILS REPORT (GEOTECHNICAL REPORT):** The report produced by the Owner's Geotechnical Engineer and submitted to the County. It shall describe the existing conditions for the foundation soil of the land being considered for development by the Owner. The said report also sets forth that the said Engineer's recommendations concerning the requirements of the said soils for the intended use. (A soils report is the same as a Geotechnical report).
47. **SPECIFICATIONS:** Those portions of the approved documents consisting of these Standard Specifications as well as other requirements for materials, equipment, construction systems, standards, and workmanship, as applied to the work and certain applicable administrative details.
48. **STANDARD SPECIFICATIONS:** The specifications contained in these documents.
49. **STREET NAME SIGNS:** Public and private signs indicating the street name, address coordinate, type of road, color designation, or combination thereof.
50. **STRUCTURAL ENGINEER:** The Professional Engineer or engineering firm specializing in structural engineering and design; which has been retained to design and engineer the structural elements required in the project under consideration.
51. **SUBCONTRACTOR:** An individual, supplier, firm, or corporation having a contract with the Contractor or with any other subcontractor for the performance of any part of the work.
52. **SUBGRADE (SUBBASE):** Subgrade shall refer to the native, prepared original soil or engineered fill under any roadway, fill, embankment, structure, etc.
53. **SUPPLEMENTARY CONDITIONS:** The part of the approved documents which amends or supplements the Standard Specifications.

- 54. **SUPPLIER:** A manufacturer, fabricator, distributor, material producer, or vendor.
- 55. **SURVEYOR:** An individual registered with the Utah State Department of Business Regulation and licensed to practice as a Professional Land Surveyor in the State of Utah.
- 56. **T.I.S.:** The Traffic Impact Study which may be required by the County and furnished by a Traffic Engineer for and in behalf of the Owner/Developer in accordance with all applicable standards and requirements of the County.
- 57. **TRAFFIC SIGNS:** All regulatory, warning, advisory, informational, and other roadside traffic signs placed.
- 58. **UNDERGROUND FACILITIES:** All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments. As well as any encasement containing facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communication, cable television, sewage and drainage removal, traffic or other control systems, or water.
- 59. **WATER DEPARTMENT:** Refers to any of the water companies that provide service to the residents of Washington County.
- 60. **WORK:** The construction services and materials required to be furnished in accordance with the approved documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction.
- 61. **WORK COMPLETION or COMPLETION OF WORK:** Work and all obligations which have been fulfilled in accordance with the approved documents.
- 62. **XERISCAPE:** Desert-type landscaping requiring low-water demand as approved by the County.

1.3 BONDS AND INSURANCE. The Contractor shall be required to obtain all necessary bonds and to carry and provide proof of all necessary insurances needed to carry out the work.

1.4 STARTING AND COMPLETING THE WORK. The Contractor shall start the work in a timely manner after receiving the approved plans. Work shall be performed in an expeditious manner so as not to unduly inconvenience the public. Work should be continuous without long periods of stoppage.

1.5 BEFORE CONSTRUCTION BEGINS. Before undertaking each part of the work, the Contractor shall carefully study and compare the approved plans and check and verify pertinent figures shown thereon and all applicable field measurements. The Contractor shall promptly report to the Owner and the County's Representative any conflict, error or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from the Owner's Engineer and the County's Representative before proceeding with any work affected thereby.

Before any work at the site is started, Contractor shall deliver to County's Representative copies of all permits which Contractor is required to purchase/obtain and maintain, and Contractor's written plan to control quality of products and workmanship in the work.

1.6 PRECONSTRUCTION CONFERENCE. Before Contractor starts the work at the site, Contractor will attend a conference with Owner, Owners Engineer, County's Representative and others for the following purposes.

1. To discuss the work and the proposed schedule,
2. To discuss procedures for processing the project,
3. To designate the name of the individual who shall have the authority to act for the Contractor at all times while work is in progress, and
4. To establish a working understanding among the parties as to the work.

1.7 APPROVED DOCUMENTS INTENT. It is the intent of the approved plans and the standard specifications to describe a functionally complete project to be constructed in accordance with County Standards and good engineering practices. Any work, materials, or equipment that may reasonably be inferred from as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe work, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of approval of the project, except as may be otherwise specifically stated.

If, during the performance of the work, Contractor finds a conflict, error or discrepancy in the approved plans or these standards, Contractor shall so report to the Owner and the County's Representative at once and before proceeding with the work affected thereby shall obtain an interpretation or clarification from Owner's Engineer and County's Representative.

1. In the event of any discrepancy between the scaled dimensions on any drawing and the written dimensions shown thereon, the written dimensions shall be taken as correct.
2. Any part of the work which is not mentioned in the specifications, but is

shown on the drawings, shall be furnished and installed by Contractor as if fully described in the specifications.

3. Work and materials shall conform to the lines, grades, dimensions and material requirements, including tolerances, shown in the Standard Specifications and on the Approved Drawings. Although measurements, sampling and testing may be considered evidence as to such conformity, County's Representative shall be the sole judge of whether the work or materials deviate from the approved documents and County representative's decision as to any allowable deviations therefrom shall be final. Deviation from approved documents, as may be required by the needs of construction, will be determined in all cases by the County representative.

Performance by the Contractor shall be required only to the extent consistent with the approved documents and reasonably interpreted from the approved plans and standard specifications and any approved supplementary specifications as being necessary to produce the intended results. In case of an irreconcilable conflict between provisions the County representative's decision shall be final.

1.8 AMENDING AND SUPPLEMENTING THE APPROVED DRAWINGS. The approved drawings may be amended on or after the effective date to provide for additions, deletions and revisions in the work thereof. All amendments, supplements, changes, and directives require approval of the County representative or his authorized representative.

1.9 UNDERGROUND FACILITIES SHOWN OR INDICATED. The information and data shown or indicated in the approved plans with respect to existing underground facilities, at or contiguous to the site, are generally based on information and data furnished by others, unless it is otherwise agreed to:

1. The County shall not be responsible for the accuracy or completeness of any such information or data;
2. Contractor and Owner shall have full responsibility for reviewing and checking all such information and data, with the one-call center (Blue Stakes location center) or other utility coordination service, prior to any excavation, to locate all underground facilities shown or indicated in the approved plans, for coordination of the work with the owners of such underground facilities during construction, and for the safety and protection thereof and repairing any damage thereto resulting from the work.

1.10 UNDERGROUND FACILITIES NOT SHOWN OR INDICATED. If an underground facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the plans the Contractor shall promptly, and before performing any work affected thereby (except in an emergency), identify the owner of such underground

facility and give appropriate notice thereof to that owner and to County's Representative. The Owner's Engineer will promptly review the underground facility to determine the extent to which the plans should be modified to reflect and document the consequences of the existence of the underground facility. The plans will be amended or supplemented to the extent necessary. During such time, Contractor shall be responsible for the safety and protection of such underground facility.

1.11 REFERENCE POINTS AND MONUMENTS. Owner's Representative shall establish land survey reference points for construction to enable Contractor to proceed with the work. The Contractor shall be responsible for laying out the work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior approval of County's Surveyor. The Contractor shall report to the County's and Owner's Representative whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

The Contractor shall not disturb any survey monuments found within the construction area until approved by the County's Surveyor. No survey monument shall be disturbed or moved until County's Surveyor has been notified and Owner's Representative has referenced the survey monument for resetting.

1.12 CONTRACTOR'S RESPONSIBILITIES - SUPERVISION AND SUPERINTENDENTS. The Contractor shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills and expertise as necessary to perform and complete the work in accordance with the approved plans and the standard specifications. The Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor shall be responsible for seeing that the finished work complies accurately with the approved documents.

The Contractor shall keep on the site at all times during the work's progress a competent superintendent. The superintendent will be Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.

1.13 SAFETY AND PROTECTION. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. All employees on the work and other persons and organizations who may be affected thereby;
2. All the work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities

not designated for removal, relocation or replacement in the course of construction.

The Contractor shall comply with all applicable laws and regulation of any public body having jurisdiction for the safety of persons or property, or to protect them from damage, injury, or loss. The Contractor shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall notify owners of adjacent property and of underground facilities and utility owners when prosecution of the work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor, supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, shall be remedied by Contractor. Contractors' duties and responsibilities for the safety and protection of the work shall continue until such time as all of the work is completed and County's Representative has issued a notice to Contractor that the work is acceptable.

The County, its officers, employees and agents, and the County's Representative shall not be answerable or accountable in any manner for any damage or loss that may happen to the work or any part thereof; for any material or equipment used in performing the work; for injury to property or person or persons; for damage to property; or for damage to adjoining property from any cause whatsoever during the progress of the work or at any time before final acceptance.

The Contractor shall have the charge and care of the work and shall bear the risk of injury or damage to any part thereof by any acts of God or the elements or from any other cause. The Contractor shall rebuild, repair and restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before the date of final acceptance and shall bear the expense thereof.

The County may make, or cause, to be made such temporary repairs as is necessary to restore service to any damaged facility. The cost of such repairs shall be borne by the Contractor.

The Contractor acknowledges that he is familiar with and will conform to the latest general safety orders of the State Industrial Commission, as contained in the Utah Occupational Safety and Health Act. The presence on site of an inspector or other person representing the County shall not in any way be construed to limit the Contractor's full responsibility for safety of all persons on the premises.

1.14 SITE EMERGENCIES. In emergencies affecting the safety or protection of persons or the work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from County's Representative is obligated to act to prevent threatened damage, injury or loss. The Contractor shall give County's Representative prompt written notice if Contractor believes that any significant changes in the work or variations from the approved documents have been caused thereby.

1.15 AUTHORIZED VARIATIONS IN WORK. Variations in the work shall be authorized by the Owner's Engineer and approved by the County's Representative.

1.16 REJECTING DEFECTIVE WORK. County's Representative and the Owner and his Engineer will have authority to disapprove or reject work which they believe to be defective, and will also have authority to require special inspection or testing of the work whether or not the work is fabricated, installed or completed.

1.17 WARRANTY AND GUARANTEE. Contractor warrants and guarantees to County that all work will be in accordance with the approved documents and will not be defective. All defective work, whether or not in place, may be rejected, corrected or accepted with conditions at the sole discretion of the County. If within the one year guarantee period, or such longer period of time as may be prescribed by laws or regulations, or by the terms of any applicable special guarantee required, or by any specific provision of the approved documents, any work is found to be, defective regardless of cause, the Owner shall promptly cause the Contractor, without cost to the County, to either correct such defective work, or, if it has been rejected by the County, remove it from the site and replace it with non-defective work.

1.18 INSPECTIONS AND OBSERVATIONS. The Contractor shall give County's Representative at least twenty-four (24) hours notice of readiness of the work for all required inspections, or approvals. Inspections and tests made at any point other than the point of incorporation in the work shall not be considered as a guarantee of acceptance. Any retesting of work or materials rejected shall be at Contractor's expense..

County's Representative(s), Owner's Engineer, testing agencies and governmental agencies with jurisdictional interests will have access to the work at reasonable times for their observation, inspecting and testing. The Contractor shall provide proper and safe conditions for such access.

If laws or regulations of any public body having jurisdiction require any work (or part thereof) to specifically be inspected, tested or approved by other than County's Representative and the Owner's Engineer, Contractor shall assume full responsibility therefor, and furnish the County's Representative the required certificates of inspection, testing, or approval.

The Contractor shall be responsible for all costs in connection with any inspection or required testing in connection with County's acceptance of materials supplied, or equipment proposed to be incorporated in the work, or of materials or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the work.

All work and materials, and the manufacture and preparation of such materials from the beginning of the work until work completion, shall be subject to acceptance or rejection by the County's Representative.

Any work or materials not in accordance with the approved documents that may be discovered before work completion shall be corrected upon notification by County's Representative. Inspection by County's Representative shall not relieve Contractor from responsibility to furnish material and workmanship in accordance with the approved documents. Failure on the part of County's Representative to discover, condemn or reject materials or work shall not be construed to imply acceptance of the same should their noncompliance become evident before work completion. It is expressly understood that nothing in this paragraph waives any of the County's rights under the guarantee provision of these specifications.

1.19 CONTRACTOR EMPLOYEES. Only competent employees of the Contractor, or subcontractor, shall be employed on the work project. Any person employed by Contractor, the sub-Contractor themselves, or subcontractor employees, who is found by County's Representative to be incompetent, intemperate, troublesome, disorderly or otherwise objectionable, or who fails or refuses to perform work properly and acceptably, shall be immediately removed from the work project by the Contractor and not be re-employed on the work project.

1.20 HISTORIC, ARCHAEOLOGICAL OR PALEONTOLOGICAL DISCOVERIES. If a suspected regulatory historic, archeological or Paleontological item, feature, or site is encountered, construction operations shall be immediately stopped in the vicinity of the discovery and the Owner and proper state and/or federal agencies shall be notified of the nature and exact location of the findings. The Contractor shall not damage the discovered objects.

The Owner shall keep the County's Representative informed as to the status of any restrictions placed upon the project and when such restrictions are removed.

1.21 WORKING HOURS. Construction activities on the contract work site shall comply with any applicable local noise and other ordinances. Unless otherwise directed or upon approval of different hours by County's Representative, working times at the work site shall be limited between dawn and dusk. Work shall not proceed on Saturday, Sunday, or on any legal holidays without prior approval from the County's Representative.

1.22 UNCOVERING WORK. If any work is covered or buried contrary to the request of County's Representative, it must, if requested, be uncovered for observation, inspection or testing as may be required to verify compliance at the Contractor's expense.

1.23 COUNTY'S REPRESENTATIVE MAY STOP THE WORK. If the work is defective, or the Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the work in such a way that the work will not conform to the approved documents, County's Representative may order Contractor to stop the work, or any portion thereof, until the cause for such an order has been eliminated.

1.24 CORRECTION OR REMOVAL OF DEFECTIVE WORK BY CONTRACTOR. If required by the County's Representative, the Contractor shall promptly, as directed, correct all defective work, whether or not fabricated, installed or completed, or if the work has been rejected by the County's Representative, remove it from the site and replace it with non-defective work. The Contractor shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of the County, engineers, architects, attorneys and other professionals) made necessary thereby.

1.25 ONE YEAR CORRECTION PERIOD. If within the one year guarantee period, or such longer period of time as may be prescribed by laws or regulations, or by the terms of any applicable special guarantee required, or by any specific provision of the approved documents, any work is found to be, defective regardless of cause, the Owner shall promptly cause the Contractor, without cost to the County, either correct such defective work, or, if it has been rejected by the County, remove it from the site and replace it with non-defective work. If the Contractor fails within thirty days to promptly comply with the terms of such instructions, or in an emergency where notice and delay would cause serious risk of loss or damage, the County may have the defective work corrected or the rejected work removed and replaced, and the Owner shall be liable for all direct, indirect and consequential costs of such removal and replacement.

The one year correction period shall similarly apply to all rework done by the Contractor.

1.26 ACCEPTANCE OF DEFECTIVE WORK. If, instead of requiring correction or removal and replacement of defective work, and the County prefers to accept it, the County may do so. Owner shall bear all direct, indirect and consequential costs attributable to County's Representative evaluation of and determination to accept such defective work.

1.27 CORRECTION OR REMOVAL OF DEFECTIVE WORK BY OWNER. If Owner fails within a reasonable time after written notice of County's Representative to correct defective work or to remove and replace rejected work, as required by County's Representative, or if Contractor fails to perform the work in accordance with the approved documents, County may, after seven days' written notice to Owner, correct and remedy any such deficiency. All direct, indirect and consequential costs of County in exercising such rights and remedies will be charged to the Owner. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of defective work.

1.28 WORK FULLY COMPLETED. When Owner considers the work (or portion thereof) ready for its intended use, Contractor shall certify in writing to County's Representative that the work (or portion thereof) has been completed in accordance with the approved documents. If fully completed, County's Representative shall within

fifteen (15) days, schedule a final inspection preparatory to writing the final inspection punch list and in accordance with these standard specifications and County policies.

1.29 FINAL INSPECTION. After all construction work is complete, the Developer shall request a Construction Completion Inspection (final inspection). Upon receipt of the request the County shall schedule this inspection with the appropriate parties. Any faulty or defective work shall be detailed in the County's inspection report. All faulty and defective work shall be corrected within 30 days from the date of the County's inspection report. If, after thirty days, the faulty or defective work has not been completed, another final inspection may be conducted by the County to determine if additional corrective work is required. The development will not be released and the guarantee period will not commence until all faulty work has been corrected.

1.30 FINAL WALKTHROUGH. Prior to the end of the guarantee period, a final walk through will be conducted. The Owner and the Contractor should contact the County's Representative to schedule the walk through. All work found to be defective shall be corrected immediately. This is preparatory to final acceptance by the County.

1.31 FINAL ACCEPTANCE. If, on the basis of Owner's and Contractor's request that work is given final acceptance and County's Representative is satisfied that the work has been satisfactorily completed the County's Representative will give written notice to Owner that the work is acceptable and the guarantee period will start. Otherwise, County's Representative will indicate in writing to Owner the reasons for refusing to recommend final acceptance, in which case Owner shall make the necessary corrections and resubmit request for final acceptance approval.

1.32 SUSPENSION OF WORK. The County's Representative shall have the authority to suspend the work wholly or in part for such period as County's Representative may deem necessary due to unsuitable weather or to other conditions the County's Representative considers unfavorable for suitable prosecution of the work. The Contractor shall immediately comply with the County's Representative order to suspend the work wholly or in part. The suspended work shall be resumed when the conditions are favorable and methods are corrected as approved by the County's Representative.

In the event the suspension of work is ordered for any reason, the Contractor, at Contractor's expense shall do the work necessary to provide a safe and secure site. If pedestrian or vehicular access is required, a smooth and unobstructed passageway shall be provided through the construction site for use by the public. In the event the Contractor fails to perform this work, the County may perform such work and the cost thereof will be billed to the Contractor or Owner.